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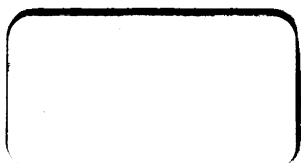


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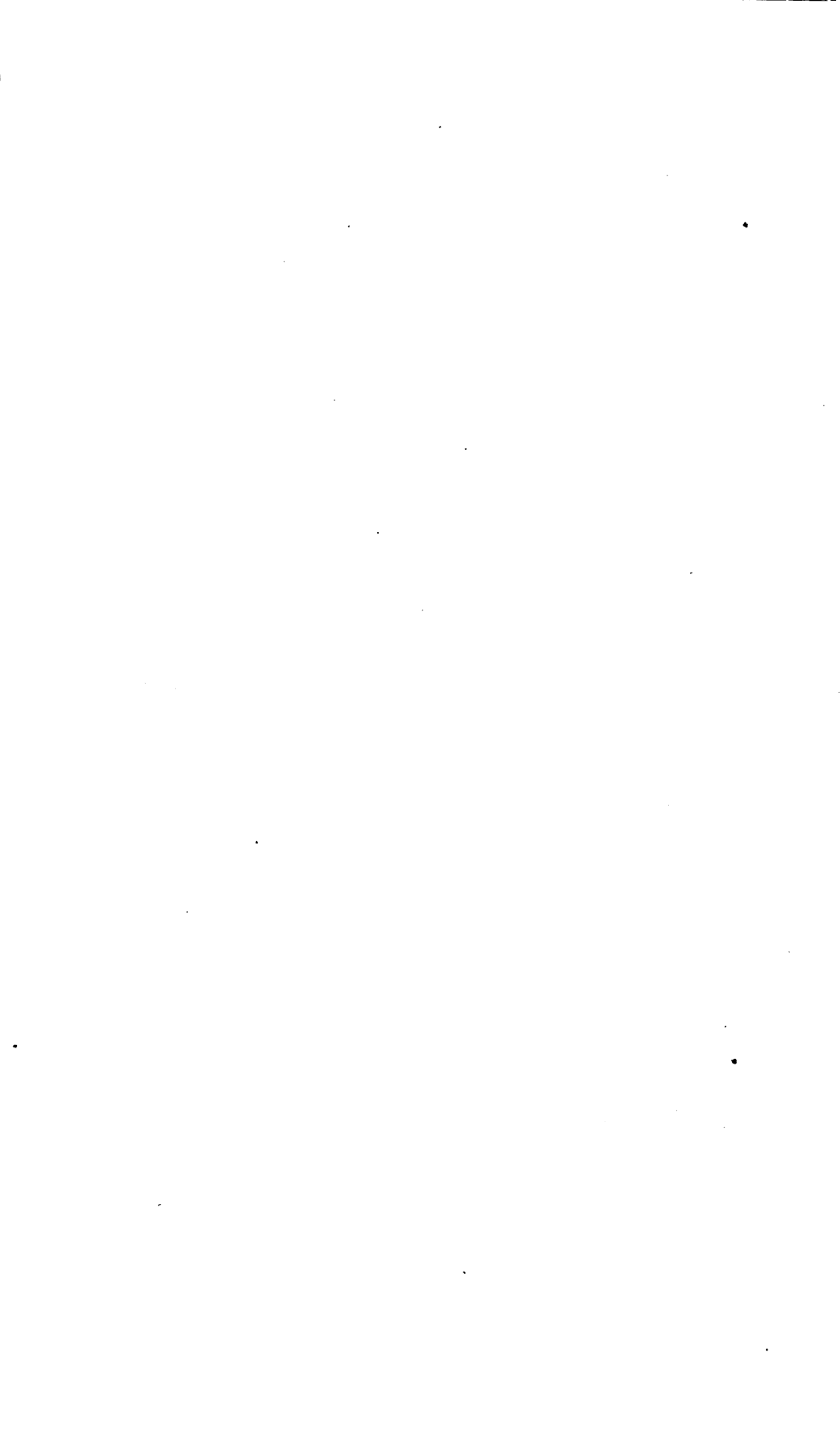
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THE SMITHSONIAN INSTITUTION.

ATLANTA EXHIBIT.

THE PURPOSE of this exhibit is to convey to the minds of those who see it an impression similar to that which they would receive if they visited the Smithsonian buildings in Washington.

It illustrates every phase of the activities of the Smithsonian Institution and its branches, especially the National Museum, upon which, as a matter of course, falls most of the responsibility of the preparation for an occasion like this.

The space assigned to the Institution is in the southeastern quarter of the Government building, and includes five thousand three hundred feet of floor space exclusive of the central aisle. It is approached through two entrances, one to the right of the southern portal one to the left of the eastern portal of the building.

The Collections are arranged to be studied in regular sequence beginning at the southern portal.

They are grouped on either side of a broad passage-

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way, one hundred and fifty feet in length, arranged in alcoves, twenty feet in width, and from twelve to twenty in depth. These alcoves are designated by letters (A-Q), as shown in the accompanying diagram.

On the right of the main entrance are a large picture of the Smithsonian building, a portrait of Secretary Langley, and a complete set of the publications of the Institution, about two hundred volumes; also photographs of apparatus and illustrations of the work in the Astrophysical Observatory and photographs of the National Zoological Park. A map, twenty feet by ten, shows the geographical distribution of the correspondents of the Institution, twenty-four thousand in number, as entered on the books of the International Exchange Bureau, also one of the fifty sets of Government documents which are sent annually abroad by the Bureau.

The work of the Institution, and its relationships, are fully explained in the pamphlet which has been published for distribution at the Exposition.

It has already been stated that most of the objects exhibited are from the collections of the United States National Museum.

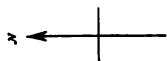
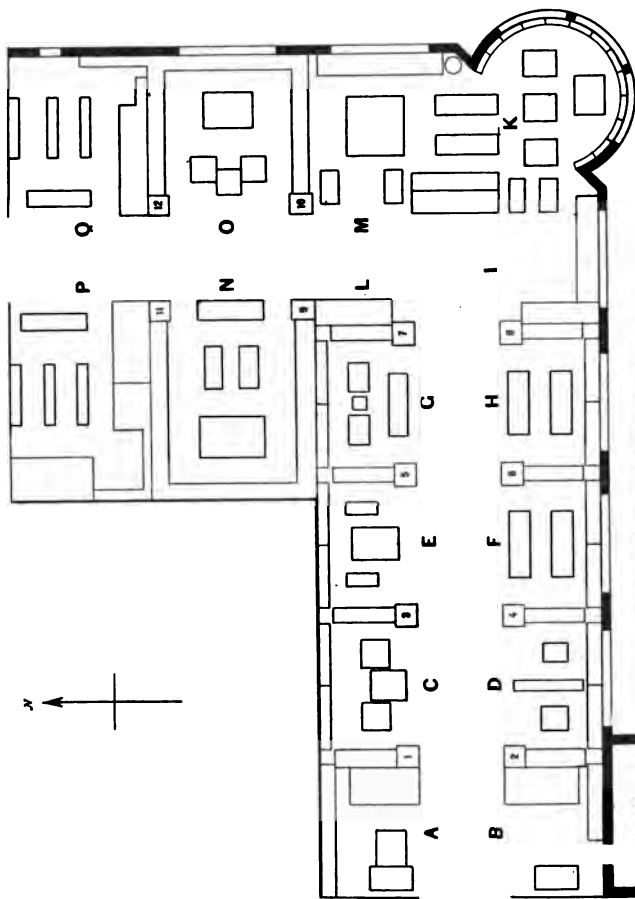
In arranging these an attempt has been made:—

(1) To give as good an idea as possible of the character of the treasures which are preserved in the Museum, by presenting an epitome of its contents, with contributions from every Department.

(2) To illustrate the methods by which Science controls, classifies, and studies great accumulations of material objects, and uses these as a means for the discovery of truth.

(3) To exhibit the manner in which collections are arranged, labeled, and displayed in a great Museum.

■ ■
EASTERN
PORTAL



■ ■
SOUTHERN
PORTAL

DIAGRAM OF SPACE, SMITHSONIAN INSTITUTION
U. S. GOVERNMENT BUILDING, ATLANTA 1955

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(4) To afford as much instruction and pleasure as possible to those who may visit the Atlanta Exposition, to impress them with the value of museums as agencies for public enlightenment, and thus to encourage the formation of public museums in the cities of the South.

DEPARTMENT OF MAMMALS.

In the entrance alcoves (A., B.), is placed also the contribution of the Department of Mammals. In a large wall case is a series of forty-three specimens to illustrate the range of forms in the class of mammalia, and in a general way the manner in which they are classified by naturalists.

Each of the eleven orders, Primates, Chiroptera, Insectivora, Carnivora, Rodentia, Ungulata, Cetacea, Sirenia, Edentata, Marsupialia, and Monotremata, is represented. There are also five groups mounted in the best style of modern taxidermy, and intended to show, by the use of natural accessories, how the animals appear in their native haunts. Flanking the arch on one side is a group of Rocky Mountain Sheep or Bighorns, *Ovis canadensis*, six in number, from Wyoming, and on the other of a group Rocky Mountain Goats, *Mazama montana*, three individuals, collected in British Columbia and Montana, by Mr. George Bird Grinnell. There is also a family group of the Coyote or Prairie Wolf, *Canis latrans*, mounted by Mr. W. T. Hornaday, from specimens obtained in Montana, and one of the finest examples of mammal mounting in existence; also a family group of the Nine-Banded Armadillo, *Tatusia novemcincta*, from Texas, and another of the American Badger, *Taxidea americana*, from Kansas.

TYPES OF MANKIND.

Near the entrance stands a portrait statue of Osceola, the great Seminole chief, who was born on the Chattahoochee River, in Georgia, in 1804, and who led his people in the Florida Indian War, which was ended by his capture and his death in 1838. This figure was modeled by Achille Colin and Theodore Mills, from a

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portrait by George Catlin, and represents the war chief at the time of his greatest power.

Beyond the archway attention is first attracted by a series of costumed figures, which are arranged on the sides of the main hall at the entrance to the alcoves. These are intended to illustrate the physical characters and the ethnical costumes of twelve of the most characteristic types of the human species. The costumes, most of which are now exhibited for the first time, have been collected by the explorers and correspondents of the Institution, and the figures, in sculptor's plaster, have been modeled either from life or from abundant material in the Museum, under the superintendence of Professor Mason and the immediate direction of Dr. Walter Hough. Each of the four divisions of mankind is represented by three figures.

Although dispersed through the entire Exhibit their relation to each other is so intimate that they are grouped together in this catalogue. Their sequence is indicated by the large numbers above the cases.

BLACK TYPES.

(1) *Papuan*, of New Guinea, modeled by Theodore A. Mills, from photographs in the National Museum.

Costume: a feather plume, earrings, and nose-pin, anklets of shell-disks with boar's tusk pendant, armlets, and wristlets of shell, and a large waist-belt of bark, carved on the exterior.

(2) *Australian*, from the Clarence River district, Australia, modeled by Theodore A. Mills, from photographs.

The figure carries a boomerang and wears an apron of Kangaroo skin.

(3) *Zulu*, from Southeast Africa, modeled by Henry J. Ellicott, from photographs by Emil Holub.

Costume: an apron of cow tails: assegai held in hand.

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BROWN-RED TYPES.

(4) *American Indian*, of the Jivaro stock of Peru, modeled from a life-sized painting by Peruvian artist, in National Museum.

Costume (collected by Lieut. W. E. Safford, U. S. N.): apron of feathers of tropical birds upon a foundation of bark cloth, anklets, etc., of seeds, beetle wings, and teeth of monkey and puma.

The Jivaros live on the headwaters of the Marañon and are thought to belong to an independent stock.

The other native stocks of North America are represented more fully in groups elsewhere displayed.

(5) *Dyak*, from Borneo, modeled under the direction of W. T. Hornaday from photographs made by himself in Borneo.

Costume: a Malay sarong. The weapons are a spear of native manufacture and shield with tufts of human hair, and a curious serpentine dagger of the form called the *creese*.

(6) *Maori*, of New Zealand, modeled by Henry J. Ellicott, from New Zealand photographs in the National Museum.

Costume: robe of New Zealand Flax, *Phormium tenax*; shoulder cape of feathers. Scepter of a chief held in both hands.

The Maoris, at present on the verge of extinction, are among the most perfect types of physical beauty.

YELLOW TYPES.

(7) *Eskimo*, from Hudson Bay, modeled by Theodore A. Mills, from photographs and from life masks in the National Museum.

Costume: reindeer skin with gloves of polar bear skin; collected by New Bedford whalers.

(8) *Tibetan*, from Eastern Tibet, modeled under the direction of W. W. Rockhill from photographs taken by him in Mongolia.

Costume: a woolen robe and boots of native manufacture.

9. *Siamese*, modeled by Theodore A. Mills, from photographs obtained by General J. B. Halderman, U. S. Minister to Siam.

Costume: robes of native fabrics, presented by the King of Siam.

WHITE TYPES.

(10) *Arab sheik*, modeled by Monsieur Hébert, replica of his figure in the Trocadero Museum, Paris.

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Costume: woolen robe or *burnoose*, turban of camel's hair, with cord, etc., gift of the Trocadero Museum.

(11) *Armenian*, from Erzerum, modeled by Theodore A. Mills, from life.

Costume (collected by Talcott Williams, of Philadelphia): a turban, embroidered coat and trousers and robe of blue gros-grain silk, shot with gold.

(12) *Berber*, from North Morocco, modeled by Theodore A. Mills, from photographs by Talcott Williams.

Costume (collected by Talcott Williams): an inner cotton garment and outer robe called the *haik*; gun of native manufacture.

DEPARTMENT OF BIRDS.

The birds are shown in six cases, five of which contain groups mounted in the midst of accessories which represent their natural surroundings and are intended to illustrate their habits and the characteristics of different ages and sexes. (Alcoves C, D).

Bower-Birds and their Playhouses.—This illustrates the curious habits of the Satin Bower-Birds of Australia which construct a "run," or bower of twigs, decorated with brightly-colored feathers, shells, bleached bones, and other conspicuous objects. They steal buttons, and other bright things from the natives, who, it is said, search these bowers for objects which they miss from their houses.

Lyre Birds and their Dancing Mound.—The Lyre Bird, *Menura superba*, is peculiar to Australia, where it inhabits the densest forests. It has a curious habit of building round hillocks, upon which the male parades with outspread tail while uttering his curious cries.

American Flamingoes and their Nests (from a photograph).—This group shows the manner in which the Flamingo sits upon its eggs; the specimens are from the Bahama Islands, where the nests are made of decomposed white coral.

Mexican Jacanas.—These specimens, from Lake Patzcuaro, in Michoacan, Mexico, illustrate the peculiar habit of walking upon floating leaves of aquatic plants, for which these birds are well adapted by their long, slender toes.

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"*The Interrupted Dinner.*"—This group, mounted by Mr. F. A. Lucas, received a diploma of honor at the Boston Exhibition of the Society of American Taxidermists. A Red-Tailed Hawk while eating a Grouse or Pheasant, is attacked by a marauding Goshawk.

Collective Exhibit of Birds of Paradise.—A representative collection, including about thirty different species of this family of birds from New Guinea, so remarkable for the beauty of its plumage.

DEPARTMENT OF REPTILES.

A group of the poisonous snakes of the United States (Alcove E), in connection with which is shown the important illustrated memoir upon "The Poisonous Snakes of North America" by Dr. Leonhard Stejneger, which has just been published by the Museum.

The specimens have been brought together from widely separated localities.

The following species are represented :

1. DIAMOND RATTLESNAKE, *Crotalus adamanteus*, Southwestern States; 2, 3. BANDED RATTLESNAKE, *Crotalus horridus*, Eastern States, south to Florida and the Mexican Gulf, west to Kansas; 4. PRAIRIE RATTLESNAKE, *Crotalus confluentus*, Great Plains; 5. WESTERN DIAMOND RATTLESNAKE, *Crotalus atrox*, Southern United States, from Texas to the Gulf of California; 7, 8. SOUTHERN GROUND RATTLESNAKE, *Sistrurus miliarius*, Southeastern States; 9, 10. COPPERHEAD, *Agkistrodon contortrix*, Eastern and Southern States; 11-13. WATER MOCCASIN, *Agkistrodon piscivorus*, Southeastern States; 14. HARLEQUIN SNAKE, *Elaps fulvius*, Southeastern and Gulf States.

DEPARTMENT OF FISHES.

The Department of Fishes shows (Alcove E) a portion of a collection, which, if exhibited as a whole, would contain a representative of every one of the two hundred and fifty existing families of fishes. The abridged collection actually shown includes seventy-three of the most characteristic American families.

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The method of installation is a new one and is worthy of careful examination.

DEPARTMENT OF COMPARATIVE ANATOMY.

This collection occupies the wall space in Alcoves C. and D., and its exhibit, arranged by Mr. F. A. Lucas, is intended to illustrate the structure of a considerable number of the most interesting types of the animal kingdom.

The collection is arranged in four groups as follows:—

Representative Forms of Invertebrate Animals.—Here are exhibited most of the orders of the invertebrate animals in such a manner as to illustrate their external appearance, general structure, and mode of growth. The smaller and more perishable forms, as well as certain details of anatomy, are illustrated by enlarged models and drawings.

Embryology and Development.—Here is shown the early stages of various animals, showing the curious transformations undergone by the Starfish, the Water Beetle, the Lancelet or Amphioxus, the Trout, and the Frog; the development of the domestic fowl and the earlier stages of man. There is also a series of models showing the development of the *Gastrula*, the most important and significant germ form of the animal kingdom, through which all animals above the Protozoa pass in the earliest period of development.

Modification of the Skeleton for Locomotion.—This series is intended to show how the Fish, Turtle, Penguin, and the Seal, representing four classes of animals, are so modified as to be all equally at home in the water; how the Bat can fly like a Bird, a Frog leap like a Kangaroo, and a Snake swim, climb and crawl, although it possesses no limbs at all. The modifications of the skeleton for climbing are illustrated by a Macaque, a Specter-lemur or Tarsier, and a Sloth; modifications for leaping by the Jerboa, Kangaroo, and Frog; for crawling, by a Water Snake; for digging, by the Mole and Gopher; for swimming, by the Fur Seal, the Penguin, the Turtle and the Golden Mackerel, or Crevallé; for sailing, by a Flying Lemur, or Colugo, a Phalanger, and the strange little lizard, *Draco volans*, known as the "Flying Dragon"; for flying, by a Stork and a Bat.

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Above the cases are shown the skeletons of a Black Bear, a Tapir, a Manatee, and a Porpoise.

Anatomical Models Illustrating Structure.—These Models are on a large scale, and are intended to show organs which are so minute in size, or so delicate in structure that they cannot otherwise be exhibited. One model illustrates the structure of the Precious Coral, and teaches how the various single polyps are connected with each other and have a common circulation so that what is eaten by one benefits all. Others show, upon a large scale, the various organs of complicated anatomy of a large Fish, a Medusa, a Fluke-Worm, a Marine-Worm, a Bee, a Frog, and a Perch.

DEPARTMENT OF MARINE INVERTEBRATES.

This exhibit is, in part, a continuation of that of the Department of Comparative Anatomy and includes, arranged nearly in systematic order, a series of specimens representing the principal groups of marine animals, beginning with the lowest or Protozoa, and embracing at the other extreme the Ascidians and Cephalopods and the Amphioxus or Lancelet, which is by many authorities regarded as the transition between invertebrate and vertebrate animals.

An attempt has been made to show the general character of the lower forms of animals which inhabit the ocean. The series begins with the Foraminifera, the smallest of the shell-bearing Protozoa, and ends with the forms which are believed to be the nearest to the vertebrate animals. Most of the types shown are familiar only to the professional naturalist, and are not even provided with popular names: no attempt is made, therefore, to describe this series in detail or to do more than mention some of the most familiar types. Sponges are shown, both as they grow and after preparation for use, and among them is the beautiful lace-like "Venus' Flower Basket." There are also Sea-anemones, Corals, and Jelly-fishes, among the specimens illustrating the group Cœlenterata, etc., some of the most beautiful being from the Naples Zoological Station and the explorations of the Fish Commission off the New England coast. Among the

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Sea-Worms are the forms known as Sea-Mice, Sea-Centipedes, and Tube-Worms. The group known as Echinodermata is illustrated by specimens from each of its five orders: (1), The Crinoids or "Sea-Lilies;" (2), The Starfishes; (3), The Ophiurans or "Brittle-Stars;" (4), The Echinoids or "Sea-Eggs;" (5), The Holothurians or "Sea-Cucumbers." There are also specimens of the Cephalopod Mollusks, including the Pearly Nautilus, the Octopus or "Devil-Fish," and the Squids and Cuttlefishes.

The series ends with the representative of the so-called Protochordata which includes the Ascidians or "Sea-Squirts," and the Lancelet, which, as has been said, occupies debatable ground, and is also shown in the exhibit of the Department of Fishes.

DEPARTMENT OF MOLLUSKS.

This is shown in Alcove F, and is properly a part of the synoptic series of marine invertebrates. It is exhibited in a single table case, and Mr. C. T. Simpson has made the most of the very small space available in selecting specimens which show the wonderful beauty and variety of form in the class of Mollusks. The exhibit is described by him as follows:—

The families and sub-families of recent shell-bearing mollusks are arranged essentially according to Tryon's "Structural and Systematic Conchology," nearly all the shell-bearing families are represented.

In the collection Nos. 1 to 4 represent families of the Class Cephalopoda, the most highly organized of the Mollusks. It includes the Chambered Nautilus, represented by numerous species in past geological ages, but of which only four species are now living: the Argonauts, or Paper Sailors, a genus in which the female only has a shell, or rather an egg-case, which is detachable from her body; the Octopuses, Cuttlefishes, Squids, and Ammonites; the last being extinct shells with marvellously complicated chambers.

No. 5 represents the Pteropoda, a class of Mollusks having thin, fragile, glassy shells which float on the surface of the sea. They are sometimes called "Sea Butterflies," and serve as food for whales.

Nos. 8 to 136 represent the Class Gasteropoda. Of these Nos. 66,

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67, 70-75, 129-132, are families which inhabit fresh water; Nos. 119-128 are terrestrial, and the remainder for the most part live in the sea. The shell of the Gasteropods is typically spiral, but varies from a mere flat plate like that concealed under the mantle of *Limax*, through conical, tubular, and coiled forms to the regular spiral. Nearly all spiral shells are dextral (right-handed), but some few families or genera are sinistral (left-handed), as for example the *Achatinellidæ* (No. 118). The Gasteropods include a large number of useful and ornamental species. Among those of economic importance are the *Buccinidæ*, the *Littorinidæ*, and the *Trochidæ*, many of which are used for food.

No. 137 represents the class Scaphopoda. The shells of some of this class are used by the Indians for making wampum.

Nos. 138 to 199a represent the class Pelecypoda or Bivalves. Most of these are marine, but Nos. 179 and 180 live in fresh water. Many are beautiful and valuable, while others are injurious. The wood-borers (No. 141) destroy the piling and the planking of vessels and dry-docks. Some of the *Mytilidæ* and *Ostreidæ* are edible. The *Aviculidæ* produce pearls and mother-of-pearl.

The class Brachiopoda, which doubtfully belongs with the Mollusca, was extremely abundant in past geological ages but is now represented by only a few species, most of which inhabit deep seas.

DEPARTMENT OF INSECTS.

This display occupies the wall space in Alcove F, and is of course very far from completeness either as an exhibit of insects or as an illustration of the wealth of material in the entomological collections of the Museum. Here, thanks to the pains of Prof. C. V. Riley, the limited space has been utilized to admirable advantage. The exhibit is described by him as follows:—

The chief exhibit, arranged in twenty-four frames, is designed to illustrate the peculiarities of the various families of insects. It is limited to Hexapods, or Insects proper, and does not include the Spiders, Mites, and Myriapods, and in fact some of the families of the true insects are necessarily omitted. The object of this family

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exhibit is a two-fold one: first, to give the student the salient characteristics by which he may be enabled to refer any insect to the family to which it belongs, and also to illustrate what are considered as family characteristics as compared with the larger and lesser groupings or alliances. The second object is to give a very good exhibit of the North American fauna, since by selecting types illustrative of each family the beholder gets a very fair impression of the character of the North American insect fauna, the family illustrations all being drawn from North America.

The second portion of the exhibit is designed to relieve the monotony of a series prepared solely for instruction by adding something pleasing to the eye. Thus eight frames have been arranged as a sort of attractive entrance to the alcove. These consist of beautiful Lepidoptera and Coleoptera which have been purposely chosen from the four great sections of the globe not represented in the family collection. Thus there are two boxes of European butterflies and moths, one of Asiatic, one of African, three of South American and one of South American beetles. These "show" cases, for such they practically are, differ, however, from similar show collections in having each insect properly named, so that many a specimen which has perhaps become familiar to the Museum or Exposition visitor by virtue of its attractiveness and brilliancy will here be properly introduced by name, and thus give an added pleasure to those who wish to be able to call things by name.

DEPARTMENT OF PALEONTOLOGY.

The exhibit occupies one double case in Alcove G, and is intended to show, so far as can be done in a small space, the character of the collections in the Museum and the manner in which they are arranged and labeled. It includes one hundred and sixteen species of North American fossils, arranged according to their geological age, and is described as follows by Mr. Charles Schuchert:—

The fossils are arranged in the order of their appearance, or chronologically, with a view to illustrate some peculiar characteristic of the

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the ~~same~~ geological systems. The surface distribution of each system is shown on the colored map of the United States, on top of the case. The ~~re~~ ~~most~~ ~~important~~ ~~undoubtedly~~ ~~the~~ ~~oldest~~ ~~undoubtedly~~ ~~fossil-bearing~~ ~~horizon~~ ~~in~~ ~~North~~ ~~America~~ ~~is~~ ~~the~~ ~~lower~~ ~~Cambrian~~ which is distinguished for the variety and abundance of its ~~very~~ ~~good~~ ~~trilobites~~ or lowly organized crustaceans (shown on the extreme left of the case). It is remarkable that so early in the history of life, ~~of~~ ~~the~~ ~~great~~ ~~diversity~~ ~~of~~ ~~structure~~ ~~is~~ ~~attained~~, since this system has all the ~~essential~~ ~~types~~ ~~of~~ ~~invertebrate~~ ~~animals~~ ~~or~~ ~~organisms~~ ~~without~~ ~~internal~~ ~~hard~~ ~~skeletons~~, such as Sponges, Corals, Molluscs, and Crustaceans. In the next section—the *Ordovician* system—the Mollusca or shell-bearing animals are present in great diversity of form. These animals continue prominently throughout all succeeding geological formations and are particularly abundant in the Tertiary strata. The *Devonian* is marked by extensive coral reefs, of which but a few species can be here shown on account of their large size: at this time peculiar strongly armored fishes also abound. The *Carboniferous* system, more particularly the Lower Carboniferous, is characterized by the development of Crinoids or stone lilies, animals related to Star-Fishes. A number of excellent specimens from the celebrated locality at Crawfordsville, Indiana, are shown. This system is also peculiar for the first abundant and diverse development of land plants whose remains have supplied the material for the many coal seams. In the shale bands between the coal or in the roofs of coal mines beautiful ferns abound, some of which are shown.

In the *Carboniferous* air-breathing animals occur rarely but in subsequent strata land animals are more numerous. In the *Jurassic* or the system immediately below the *Cretaceous* great reptile-like animals, the Dinosaurs, abounded, some seventy feet and more in length, continuing to the close of the Cretaceous. Among shelled animals the Ammonites are particularly peculiar to these systems.

From the *Tertiary* formations of the Rocky Mountain region their young have been exhumed many and diverse mammals or animals that suckle. These are the ancestors of many modern land animals now inhabiting land areas than North America. Among them were other very small horses with three toes on each foot, camels, tapirs, elephants, etc. One of the characteristic sea animals of this time abounding in the Gulf border region is the Zeuglodon Whale, a form related to both whales and seals. A restoration of the skeleton of this long

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and slender animal is shown, suspended from the roof. The shelled animals of this era at once remind us of living species.

This collection also aims to show methods of displaying fossils now in use in the Department of Paleontology. The fossils are cleaned of all adhering rock, and when possible a series of each species is selected to show specific varieties, being then glued upon encaustic tiles. The advantage of tiles lies in the fact that they will neither fade nor warp, are more uniform in size and nearly as cheap as paper or thin wooden tablets. In cases where the attached specimens must be removed this can readily be accomplished by soaking in water without injury to the tiles.

DEPARTMENT OF GEOLOGY.

In a single case in Alcove H is a collection illustrating the occurrence and association of Gold and Silver in nature, which is thus described by Prof. George P. Merrill:—

The exhibit begins with a series of specimens showing both the native metals and their compounds in the condition of greatest natural purity. This is followed by a series of the same compounds with their characteristic associations, but in which the metal-bearing portions are still plainly evident, and this in turn by a third series showing selected types of the ores, as mined, but in which, as a rule, the metal or its compounds are scarcely discernable.

Attention is called to the fact that while gold, aside from its native form enters as an essential constituent into less than half-a-dozen known minerals, silver occurs in upwards of six times as many. Thus gold, aside from its natural alloys with silver, (electrum) bismuth and palladium, is found in chemical combination with other elements only in the minerals petzite, sylvanite, krennerite, and nagyagite. Silver, on the other hand, is found native, as an alloy with gold (electrum), or mercury (amalgam), and also as an essential element in compounds forming nearly forty mineral species more or less well defined.

Several of these compounds are very rare, and not at present included in the series exhibited.

It is further to be noted, that while both gold and silver occur

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either as native or in compounds of such size as to be easily seen by the naked eye, the great majority of ores of either metal are composed in large part of other substances with which the metal is so finely and intimately admixed as to be invisible and determinable only by chemical means or where it occurs as a replacing constituent with other elements. Thus the most common form of gold ore is an auriferous pyrites, while the most common silver ore is an argentiferous galena.

In the series as exhibited attention needs be called, first, to the native gold, that is, the gold found in the metallic state in nature, as displayed in the form of nuggets, leaf gold, wire gold, and gold-dust from various localities; second, to the compounds of gold with silver, tellurium, antimony, and sulphur as shown in the minerals petzite, sylvanite, krennerite, and nagyagite; third to the occurrence of the native metal with its associates, either as dust or nuggets in sand and gravel, or impregnating quartz, slate, calcite, and other minerals forming the characteristic gangue, and lastly to the series of gold ores, representing the metal-bearing rocks as usually mined, and which, while, as above-noted, showing no trace, on casual inspection, of the precious metal, nevertheless contain it in sufficient amount to render its extraction by chemical or mechanical means a profitable industry.

The silver-bearing series is arranged in a similar manner. It is to be noted that while gold is common in deposits of sand and gravel, as "placer gold," silver very rarely occurs in this form, and is represented here only by the silver-bearing sandstone from Washington County, Utah. Native silver in the form of "wire" or "moss" silver is however comparatively common as shown in the specimens from Mexico and Saxony. Some of the silver-bearing compounds are of great beauty, as illustrated in the ruby silvers *proustite* and *pyrargyrite*.

The total annual production of gold and silver for the world, for 1894, is given as 8,616,892 ounces of gold, and 166,437,408 ounces of silver.

DEPARTMENT OF MINERALS.

This department (Alcove G) is represented by a collection of high educational importance, arranged by Mr. Wirt Tassin, under the direction of Prof. F. W.

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Clarke, the curator, and is described as follows:—

Entering the alcove the wall cases contain a series of minerals selected and labeled to illustrate the several properties or characters of one mineral species as compared with other mineral species, in other words, "Comparative Mineralogy."

The first case on the left contains a series of one hundred and forty-three minerals illustrating Chemical Mineralogy; that is, the composition, variation in composition, and the relation of composition to form of minerals.

The chemical composition of minerals is illustrated by several typical elements together with a majority of their combinations. It will be observed that gold has comparatively few combinations and that its occurrence is practically restricted to the element; while iron, the most useful of the heavy metals, rarely occurs as the element, yet affords a great number and variety of compounds.

Proceeding from left to right the next case contains a series of models and specimens illustrating the principal forms of minerals depending upon molecular structure or form.

Beginning with the systems of crystalization each system is represented by a typical crystal group followed by models and specimens showing the principal forms belonging to that system.

For example, fluorite, a typical isometric mineral, is shown, then a glass model of the fundamental isometric form, the octahedron, and spinel, a typical octahedral mineral. Following the systems of crystallization are Crystal Aggregates, including twin crystals, parallel growths and imperfections of crystals.

The next wall cases contain series illustrating isomorphism, pseudomorphism, and the various characters depending upon the action of the several physical forces, such as Light, Cohesion, Mass, Heat, etc.

The floor case on the left contains several minerals arranged to show the great diversity and beauty of their coloring.

The floor case on the right contains meteorites showing the general character and composition of those bodies. Attention is called to the large meteorite on the pedestal weighing seven hundred and forty-six pounds from Canon Diablo, Arizona, and to the several other meteoric irons in the case, from the same locality. These irons are of interest because of the great size and extent of the "fall," over ten

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tons of them having been found in the region, and also from the fact that they contain microscopic diamonds.

SYNOPSIS OF ARRANGEMENT.

COMPARATIVE SERIES.

I. CHEMICAL MINERALOGY.—Chemical composition. Variation in composition. Relation of composition to form.

II. PHYSICAL MINERALOGY.—Crystallography, Compound crystals, Isomorphism, Pleomorphism.

Pseudomorphs.—Characters depending upon Light.—Luster; Color; Diaphaneity. Characters depending upon Cohesion.—Cleavage; Fracture; Tenacity; Hardness.—Characters depending upon Mass, Heat, Magnetism, and Electricity.—Specific gravity; Fusibility; Magnetism; and Electricity.

DEPARTMENT OF BOTANY.

This exhibit occupies three sides of Alcove H, and consists of a collection of the woods and shrubs of Japan mounted in a very original and beautiful manner by Japanese artists. To each species is devoted a polished panel, made of its own wood, upon which are painted the leaves, flowers, and fruit, while the panel is framed in its own bark.

The collections belonging to this department are, for the most part, not available for exhibition purposes, being chiefly dried specimens for research work. The National herbarium contains a quarter of a million mounted plants.

DEPARTMENT OF MATERIA MEDICA.

The exhibit of this department, Alcove H, consists of a case illustrating the composition of a number of the principal mineral waters used as beverages and for medicine. By the side of a bottle of the water as

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found in commerce are placed a number of smaller bottles, which contain the amount of each chemical substance found in the amount of water shown in the first bottle. Here also is a case which illustrates the composition of the human body by displaying in bottles the exact quantity of each substance to be found in the body of a man of average size (one hundred and fifty-four pounds), while in a parallel series are shown the quantities of each element in the same man's body.

DEPARTMENT OF PREHISTORIC ANTHROPOLOGY.

This exhibit occupies Alcove I, and consists of a small, carefully selected collection of implements and objects used by man in prehistoric times, the specimens being mostly American.

The explanation of the Exhibit is contributed by Dr. Thomas Wilson:—

In this exhibit seven hundred and ninety-two specimens are displayed, as follows: Stone, four hundred and ten; copper, one hundred and ten; shell, twenty-six; bronze, seventy-eight; gold, twenty-six; bone, eighteen; pottery, one hundred and twenty-four.

Anthropology is the Science of Man considered in all of his parts and nature. *Prehistoric* Anthropology is that part of this great science which relates to man in prehistoric times. "Prehistoric" means before written history was begun in the locality or country under consideration. History begun several thousand years earlier in Egypt and the Classic Orient than in Gaul and Britain, and these fifteen hundred years earlier than America. Knowledge of the existence of prehistoric races began with the discovery, about the year 1806, of the Ages of Stone, Bronze, and Iron in the Scandinavian countries. It was not recognized in its full scope until the discovery in France, about 1859, of what is called the "Chipped Stone" or "Paleolithic" Age. Since the antiquity of man has been a subject of lively discussion in most countries, and many attempts have been made to construct the history of his early times. The an-

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nouncement by Darwin of his theory of "Evolution" as the origin of the human species added interest to the investigation. The study of the life, customs, culture, and, indeed, the making of the history of prehistoric man can only be done through the investigation of objects made and used by him. This investigation considers their condition, the mode of their manufacture, their associations, and the places wherein they have been buried, with the incomplete information we get from the skeletons; in its relation to the North American Indian we are dependent upon the objects we find in his workshops, his destroyed homes, or in his graves and monuments. We study his mounds and earthworks, cemeteries, village-sites, quarries, and workshops. We find his axes, hatchets, adzes, and gouges, and from these we speculate how he felled trees, cut wood, made boats, sledges, saddles, and the hundred objects of wood employed by savages. His stone quarries and workshops show the raw material, and how he manufactured his implements by the processes of chipping, grinding, polishing, and drilling. The same for horn, shell, and bone, of which we possess many thousand objects made into beads, pins, gorgets and other ornaments. The copper and gold objects are to be studied on the same lines. Pottery was much used by Prehistoric Man, and its manufacture was carried on wherever he dwelt. The pottery exhibit is displayed on the shelves above the flat-topped cases. To the right are specimens of European Prehistoric Pottery of the Neolithic and Bronze Ages. This is followed by ware from the Aborigines of the United States. The long shelves in front contain specimens from Mexico, Central, and South America. On a pedestal is a reproduction of an "Ogham stone," illustrating a rude written language, which was prevalent in Ireland at a very early day.

THE ORIGIN AND SIGNIFICANCE OF GAMES.

In the next Alcove (K), which occupies the circular tower in the southeast corner of the building, is displayed a special collection illustrating "The Origin and Significance of Games in all Parts of the World," especial prominence being given to chess and cards. The display is made in cooperation with the University of

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Pennsylvania, and has been arranged by Mr. Stewart Culin, director of the University Museum:—

The objects, arranged in a progressive series, fill thirty-four upright cases, like pictures in frames, and one large table case. They form an almost complete history of cards and chess, beginning with the primitive forms, originally used for divination, down to the games of the present day.

Especial interest attaches to the fact that the clue to the origin of both chess and cards was found by Mr. Culin, with the aid given by Mr. Cushing, among the aboriginal people of America. The pack of cards is shown to have originally consisted of a bundle of arrows, marked with the signs of the world quarters. The shaftments, or feathered part of these arrows, bearing cosmical marks were first used in fortune-telling, and from their use our card games arose.

In America the Indians did not get beyond the use of carved and painted staves. The American case shows the arrows of the McCloud River Indians of California, marked with colored ribbons, by which they were distinguished. Side by side with them are the gambling-sticks of the Haidas of Vancouver's Island, similarly marked with rings of color and used like cards in their gambling even at the present day. In the adjoining case, devoted to Eastern Asia, the practice arrows of Korea are shown, and with them the derived playing cards here made of oiled paper, yet bearing, both on their backs and faces, devices copied from the cut feathers of the arrows. With them are Chinese cards with the same emblems surviving as markers or indexes at the ends. These cards are "double-headers," as indeed were the gambling sticks, carrying back the idea of our common playing cards with double heads and index marks to the most remote antiquity. The Japanese cards in the same case bear emblems derived in part from the same source, while the circular cards, called *Gunify*, of which a beautiful pack is shown, are painted in colors to correspond with the world quarters. A single pack of the national cards of each of the principal countries in the world follow, comprising in Europe, Germany, France, Spain, Italy, Switzerland, Austria, Sweden, England, and Russia. The card series closes with the pack with pictures of the Chicago Exposition and the cards with pictures of the confederate flag, made in England for sale in the South during the war.

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The chess series begins like that of cards with the divinatory games of primitive people, in which our game originated. America is here again conspicuous, and with the objects representing the first steps in the evolution of the game are shown other common things, such as visiting cards and the folding fan, which Mr. Culin traces, with chess, to the marked arrow of primitive culture. The historical chess series comprises boards and men from India, Burmah, the Malay Peninsula, the Maldiv Islands, Korea, China, and Japan.

The specimens are all arranged as if actual play.

DEPARTMENT OF ARTS AND INDUSTRIES.

In Alcove K is shown also a small case containing a collection of ancient glass from excavations in the vicinity of Tyre and Sidon, remarkable not only for its beauty of form but on account of the entirely iridescent coloring which it has acquired through having been buried in the soil for twenty centuries or more.

Adjoining this is a case of carved ivories from Japan. The native sculptors have shown, with great minuteness and accuracy, the costume, tools, and methods, of work of a large number of the native mechanics before the introduction of any European implements—the carpenter, the mason, the armor-maker, the lantern-maker, the umbrella-maker, the cooper, etc.

Here also is shown a collection to illustrate the development of the Ceramic Art in Japan. This has been arranged by Mr. Heromich Shugio, and although it does not contain any considerable number of very costly pieces, it is historically quite complete, and is described by Mr. Shugio as follows:—

Japanese history mentions that some pottery was made in a village of Idsumi to a considerable extent from the very early days, and that another factory was in existence in the province of Ouri during the period of 581–660 B. C. Twenty-nine years before the Christian

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era Tenno Suijin ordered that human figures made of burnt clay be buried with his wife, Empress Hihsubrime, in place of her attendants, as had been customary until that time whenever any member of the Imperial family died. This humane decree abolished an abominable custom, and the pottery in its infancy played one of the most important and noblest acts in history.

The early productions were of mere unglazed burnt clay, not like those of the early American pottery.

The introduction of the potter's wheel by Giyoki, a priest of Idsumi, in 724 A. D., must be taken as the real beginning of our Ceramic art.

The first glazed stoneware is said to have been made by Kato Shiroye now at Seto, in the province of Owari, in 1223 A. D., after his return from China, where he spent several years in studying Ceramic art. From his time, Seto became the centre of Ceramic art, and all the Ceramic productions came to be called "Seto mono" in Japan, as all the porcelains are called "China" in Great Britain and America.

The first porcelain was made by Gordayu Shonsui, a native of the province of Ise, who studied Ceramic art in China in about 1513. His productions were mostly made with Chinese materials, which were brought back by him from that country and they were decorated in blue under the glaze.

The greatest progress in Japanese Ceramic art has been made since the triumphant return of the Korean Expedition in 1859, when many skilful Korean potters were brought over, and the famous Ceramic factories of Hizen, Higo, Chikuzen, Satsuma, Tosa, Nagato, Yamashiro, Owari, etc., were either established or improved by those potters.

The first potter who succeeded in decorating porcelain with enamel paintings over the glaze was the celebrated potter Kakiyemon, of the Sakaida family of Nangawara, a village near Arita, who mastered this secret of enamel painting from Tokuzayemon, of Imri, who learned his method from a captain of a Chinese ship at Nagasaki in 1640.

Kakiyemon was assisted in his essays in enamel painting by Gosu Gombei, another well known potter. In 1646 Kakiyemon is said to have sold his decorated porcelains to a Chinese trader in Nagasaki, and thus he has the honor of being the first Japanese potter who

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decorated porcelain with enamels, and who sold Japanese porcelains to a foreigner. Since then his productions were bought by Chinese and Dutch traders at Nagasaki to export. He was honored by Prince Naheshinia Samio, of Hizen, by being appointed a special maker to His Highness. Specimens numbers 150 and 151 are his works. Although they are not his best works they will be found, on close examination, to be the works of a master hand.

Nisei, the great Kioto potter, through the generosity and liberality of Wankiu, a wealthy Osaka merchant, succeeded, during 1655-'57, in decorating pottery with enamel painting after the newly introduced method by Kakiyemon, now so much admired as the Ninsei ware. Number 53 in this collection is a specimen of this great potter, and Numbers 54, 55, 56, and 57, are copies after his works. Numbers 56 and 57 were copied by Okumura Shozan, of Kioto, who is perhaps the best copyist, of Ninsei, since his time, and some of his copies are often mistaken for the originals even by Japanese connoisseurs.

Another important epoch in our Ceramic art was the discovery of the use of saggars in baking porcelains by Tsuji Kizayemon, a noted potter of Arita, during the Kwhmbum period (1661-'72). The porcelains baked in saggars are called "Gokuskin Yaki." Number 152 is a specimen of this Gokuskin Yaki made by one of his descendents who were honored by being appointed makers to the Imperial Court of Kioto. The porcelain was and is made at Arita; Okawachi (where Naheshima ware was made); Mikawachi (where Hirado ware was made); Shiraishi, Kameyama, etc., in the province of Hizen; at Seto, in Owari; at Tajimi, in Mino; at Kutani, in Kaga; at Kiyomidsu, in Yamashiro; at Sanda, in Settsu; at Himeji, in Harima; at Hikone or Koto, in Omi; at Ota and Tokio, in Musashi; at Okayama, in Kii; Wakamatusu, in Iwashiro, etc.; of which nearly all the factories are represented in the collection. Of the important factories where the pottery (Faience and Stoneware) was and is made this collection represents Satsuma; Karatsu, in Hizen; Takatori, in Chikuzen, Yatsushiro, in Higo; Shiga, on the Island of Tsushima; Hagi or Matsumoto, in Nagato; Suwo; Shido, in Samuki; Kosohe, in Settsu; Akahada, in Yamato; Kioto, in Yamashiro; Shigaraki, in Omi; Seto, in Owari; Tachikui and Sasayama, in Tamba; Fujiria, in Idsumo; Iga, Sado, Kutani, in Kaga; Soma, in Iwaki; Imbe, in Bizen; Mianto, in Idsumi; Banko, in Ise, etc.

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The collection is displayed in three cases in Alcove K, by provinces, in accordance with the following plan:—

Hizen	Karatsu.	Idsumi	Idsumi.
	Arita.	Yamato	Akahada.
	Hirada.	Survo	Survo.
	Nangawara.	Nagato	Hagi.
	Nabeshima.	Chikuzen	Takatovi.
	Kakiyemon.	Higo	Yatsushiro.
	Tsryi Gokushin.	Satsuma	Satsuma.
	Kameyama.	Settsu	Sanda.
	Bogasaki.		Kirko.
	Shiraishi.		Kosube.
	Tsushima.	Iwaki	Soma.
Taishiu (Island of Tsushima).			
Owari	Seto.	Kaga	Kutani.
	Horaku.	Ise	Banko.
Bizen	Bizen.	Sado	Sado.
Omi	Shigaraki.	Sanuki	Shido.
	Koto.	Yamashiro	Raku.
Kii	Zuishi.		Kioto.
Iga	Iga.	Musashi	Tokio.
Tamba	Tamba.		Ota.
Idzumo	Idzumo.		

Across the aisle (Alcove L) is a small series of musical instruments intended to illustrate the character and method of arrangement of the very extensive collection in the National Museum. A series of five times the extent had been selected to be sent to Atlanta, but the limitations of space were such as to make it necessary to reduce this, as well as every other exhibit.

The collection is intended to illustrate a few of the stages in the progressive evolution of stringed instruments. The series begins with a rude musical bow of Mashonaland, which is used only to mark time and is audible only to the performer who holds one end between his teeth. At the other end of the series are the guitar and violin; the former represented not only by the well-known European instruments, but by related forms from India and Africa. Intermediate stages are shown by a number of interesting types named and described upon the labels. The series selected for Atlanta contains

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about two hundred instruments; the small portion of it shown gives but a meager idea of the great collection in the National Museum, which includes some three thousand forms.

DEPARTMENT OF ORIENTAL ANTIQUITIES AND RELIGIOUS CEREMONIAL.

Alcove M is devoted to a collection of objects illustrative of the Bible, arranged under the direction of Dr. Cyrus Adler, custodian of the collection of Religious Ceremonials in the Museum. An attempt has been made to show representative specimens of most of the classes of objects which are of value to the students of the Bible, and the collection, through necessarily limited through lack of space, may fairly be said to constitute a miniature Biblical Museum.

The archæology of the Bible is represented by a collection of casts illustrating the ancient Hittites, frequently mentioned in the Bible from the time of Abraham down; by an Egyptian mummy secured by the late Hon. S. S. Cox, U. S. minister to Turkey; busts of Rameses, the second, supposed to have been the Pharaoh of the Exodus; and of his father, Seti. Assyria and Babylonia are represented by a model of a temple tower of Babylon, especially constructed for this Exposition. This Temple Tower was situated in the outskirts of the city of Babylon. The model is made after the description of Herodotus, and the report on the ruins discovered by Sir Henry Rawlinson. There is also a cast of a huge Assyrian Winged Lion, eleven feet long, and eleven feet high, such as were placed to guard the doorway of Assyrian Temples; cast of the Chaldean account of the Flood, etc. Palestinean Archæology is represented by casts of Moabite stone, Siloam inscription, and Temple stone.

The ancient religion of the Jews is represented by a case containing a selection of the more important objects of Jewish ceremonial. Still another case shows a collection of the gems of Palestine, with a model illustrating the method in which the gems were placed in the High Priest's breastplate. There is also a collection of coins struck

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in Palestine, as well as those which appeared in Bible times in cities mentioned in the Bible. In another case is a collection of musical instruments of Palestine and adjacent countries, which differ in nowise from those used in ancient times. To these are added a few representations of musical instruments from Egyptian and Assyrian monuments. A collection of domestic implements, such as are mentioned in the Bible, and a relief map of Palestine, are also shown.

In this connection there is also exhibited a collection to illustrate the history of the Bible, as a book, and to show the important translations which have been made of it. The Hebrew Bible is represented by portions of an Egyptian manuscript of the fourteenth century, facsimile of the Aleppo Codex, by the first American edition of the Hebrew Bible printed at Philadelphia in 1810; by other well-known prints of Amsterdam, Antwerp, and Hamburg. The Septuagint or Greek version is represented by facsimiles of the famous Alexandrian and Vatican codices. Following these are copies of the Targum or Aramean version, the Syriac version; the Coptic version (represented by a manuscript); the Ethiopic version; Gothic version, Anglo-Saxon version; the edition of the Latin version or vulgate of St. Jerome; a Spanish-Jewish version; the Arabic version (represented by a manuscript); and the translation of Saadia.

The New Testament is represented in the Vatican and Alexandrian Codices, already mentioned, as well as in the Sinaitic and by the first American edition printed at Worcester in 1800.

Finally, there is a most interesting and valuable work, consisting of a New Testament arranged in historical order by clippings from the Latin, Greek, French, and English Testaments, all arranged by Thomas Jefferson. This Book contains a concordance of the verses used, and a number of notes scattered throughout, all in Jefferson's handwriting, and is said to have been arranged by him for translation into the Indian languages, so that the Gospels might be presented to the Indians in a simple form.

DEPARTMENT OF TECHNOLOGY.

Alcove N is occupied by objects designed to show

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the more important stages of improvement through which the appliances now in use for the conveyance of men and goods from place to place have passed before the present high standards of mechanical efficiency were attained: These have been selected with the special purpose of illustrating the important influence exercised by the South Atlantic States upon the early history of internal improvement in America and the inauguration of transatlantic commerce by steam. The theory upon which they are arranged is thus described by Mr. J. E. Watkins:—

The origin of many of the contrivances now utilized by man to facilitate individual movement or to transport objects too heavy to be carried by man belongs to a period so remote in prehistoric time that no attempt to arrange aboriginal water or land vehicles in a definite chronological sequence has been made.

Boats and Ships.—Primitive boats, such as the Catamaran and Dugout Canoe, are placed at the beginning of the series which contains among the craft propelled by poles or oars the Ohio River flatboat, and keelboat by the instrumentality of which the settlement of the Southern and Western States was promoted during Colonial and Revolutionary times. Among the sailships are to be found the "Sally Constant," from which the first English settlers in the United States landed at Jamestown, Virginia, in 1609, and the Mayflower which brought the Puritans to Plymouth Rock eleven years later.

The American Steamboat.—The fine rivers of America stimulated the exertions of several ingenious men living on the Atlantic seaboard to adapt the steam engine to navigation. Prominent among these pioneers, whose labors make good America's claim to the birthplace of the steamboat, was James Rumsey, some of whose experiments upon the Potomac River were witnessed by General Washington as early as 1787. A model of Rumsey's steamboat of 1788 and of that made by Fitch about the same time are shown together with the model of the first screw propelled steamboat to navigate the waters of any country built by John Stevens in 1804. Fulton's "Clermont" of 1807, Stevens' "Phoenix" of 1808 are also in the

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series which contains a model of the steamship "Savannah," built in 1818 by Georgia capitalists, which has the distinction of being the first steamship to cross the Ocean sailing from Savannah, Georgia, for Liverpool on her initial voyage, Saturday, May 22, 1819. The original log-book, containing the account of this historic voyage, is deposited in the National Museum.

The collection further embraces the following series :

1. Boats pushed by poles or propelled by paddles or oars.
2. Sailboats (driven entirely by the wind).
3. Steamboats.

The American Railway.—As the South Atlantic States were foremost in the introduction of transatlantic steam navigation, so were they early in the field of railroad construction. The first railway line, one hundred miles long, built and operated in the world, was the railroad, one hundred and thirty-nine miles long, built by the South Carolina Railroad Company from Augusta, Georgia, to Charleston, South Carolina ; and the first steam locomotive built upon the Western Continent for actual service was the "Best Friend," which was built for that road in 1830 and went into service in the following year. •

Various forms of locomotives experimented with in England and America previous to the construction of the "Best Friend" are illustrated.

The First Steam Railway Train in the South Atlantic States.—The South Carolina Railway was built upon plans which would now entitle it to be called an elevated railway. A model showing the method of track construction upon which is placed the first steam train that ran in the South Atlantic States December 14, 1830. Near it are placed models of sleeping-car appliances built for railways terminating at Richmond and Petersburg, Virginia; the earliest forms of sleeping berths used in American cars.

Land Vehicles.—For the purposes of this Exposition the Land Vehicles are arranged under the following classifications :

- I. Land Vehicles drawn by men or domestic animals.
 1. The Rolling Load.
 2. Sledges and Rollers.
 3. Vehicles with solid (or nearly solid) wheels.
 4. Vehicles with wheels containing spokes.

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II. Land Vehicles propelled by natural or generated forces.

1. Experimental sail cars and horse-power locomotives.
2. Experimental Steam Locomotives.
3. Experimental Electrical Locomotives.

Early Electrical Apparatus.—In no other department of science have American investigators, from the very beginning, been so successful, not only in the discovery of fundamental truths, but also in the prompt application of the principles deduced therefrom to useful purposes as in the domain of electricity.

The success of Franklin's experiments in the year 1784 in the construction of what he calls the "Electrical Wheel" is illustrated, for the first time, in these collections in the models of the two devices involving the most important principles utilized in the modern motor as described by Franklin in his letter to Peter Collinson, London, dated that year and published on page 252 of his autobiography. Strangely enough no prominence has been given to these ancient electrical machines in subsequent scientific writings relating to the history of electricity.

In the models and photographs of the apparatus designed in 1829 by Joseph Henry, the First Secretary of the Smithsonian Institution, are found the instruments by which the electro-magnet was for the first time utilized to convey a signal to a distance; in it is embodied the principle upon which the modern electrical telegraph is based. The first instrument to make a permanent record of words transmitted over a wire by the agency of electro-magnet was designed and constructed by Samuel F. B. Morse in 1837. A model, an exact reproduction of the original machine, too precious to risk removal, which is now in the custody of the Western Union Telegraph Company, has been obtained through the courtesy of the president of that Company.

Actively associated with Morse from the date of his earlier experiments was Alfred Vail, a man of great ingenuity and rare mechanical ability.

The original telegraphic instrument by which the historic message, "What hath God wrought," was received at Baltimore, May 24, 1844, and constructed under the direction of Vail. It is one of the valuable treasures deposited in the United States National Museum, the

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removal of which being prohibited on the ground of safety, is illustrated by a model of full size.

Limitations of space, unfortunately, prevent a more extended exhibit of apparatus connected with the origin of the telephone, the dynamo, and the application of the electrical current for producing light, and the transmission of power.

Following is a brief outline of the apparatus exhibited :

III. Early Electrical Apparatus (models only exhibited).

1. Apparatus designed by Benjamin Franklin.
2. Apparatus designed by Joseph Henry.
3. Telegraphic apparatus invented by Morse and Vail.

In the same Alcove are shown the contributions of the Department of History and Numismatics. This consists of a series of coins and medals, as follows:—

(a) Principal coins occurring in the the North American Colonies from 1525 to the establishment of the United States Mint in 1793.

(b) Medals commemorative of the Revolutionary War.

Among the most interesting coins are the "Oak Tree" shillings 1652, the "Mark Nubby" penny, the "Rosa American" penny, the Continental dollar, of the copper coins issued by the Colonies before the Revolution. Here also are shown three colored sketches of birds by John J. Audubon, the most famous painter of birds who ever lived, who was born near New Orleans, in 1781.

BUREAU OF AMERICAN ETHNOLOGY.

The exhibit of the Bureau of American Ethnology occupies Alcove O and has been prepared under the direction of Prof. J W McGee, who describes it as follows:—

This exhibit illustrates three representative Indian tribes of North America, viz: Cherokee, Papago, and Seri. The Cherokee Indians represent a large and important Iroquoian family or stock; the Papago tribe forms the leading branch of the Piman stock; while the Seri Indians are the sole representatives of their family. It has

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been thought better to make moderately full exhibits of a limited number of tribes than to illustrate a large number of tribes incompletely. The Cherokee tribe was selected for representation because of its local interest ; the others because they are little known and the collections are quite new.

The Cherokee Indians were the aboriginal owners of the pine-clad hills and fertile valleys of what is now northern Georgia, the western Carolinas, eastern Tennessee, and a part of Virginia. They were the first occupants of the site of Atlanta ; they lingered long in their old hunting grounds ; and while most of the tribes have disappeared from the woodlands and mountains, a few remain in the eastern Cherokee reservation in Swain county, North Carolina, within one hundred and fifty miles of Atlanta. The collections illustrating the Cherokee Indians comprises pottery and basketry, largely of primitive types ; the aboriginal bow and arrow, with the singular blow-gun, which attracted much interest among the earliest white explorers ; the eagle-feather masks and tortoise-shell rattles, and other paraphernalia of the primitive ceremonials ; stone implements and pipes ; pottery-making tools and domestic utensils ; articles of costume and personal adornment ; fishing spears, etc. The collection was made within a few years by an expert familiar with Indian customs, who was enabled to obtain the most ancient and sacred, as well as the modern possessions of the Indians. While many of the articles are accultural (or affected by the influence of the higher race), many illustrate fairly the aboriginal ideas of the Indians of southeastern United States. The collection fills one wall case, with the larger articles arranged above it.

The Papago Indians are a tribe of the desert ; they occupy the hot and dry Papagueria (the most arid region of equal extent in North America), lying south of the Gila river and west of the Sierra Madre mountains in Arizona and Sonora (Mexico). Their mode of life is a blending of the nomadic and agricultural ; they establish settlements by springs and water holes, and, while the ground is moist from one of the rare storms, they plant maize, melons and beans, which quickly mature ; and when the spring fails or the water hole dries up, the rancheria is abandoned and the people scatter in search of other sources of water. In autumn they collect the fruits of different species of cactus, mesquite beans, etc., and in winter they migrate

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to the mountains of Mexico, where they live by hunting. Although discovered and highly esteemed by the early Spanish explorers and missionaries, the Papago Indians are little known outside of their own territory ; the collection exhibited is the first one of note, both as to articles and photographs ever brought to eastern United States. It embraces pottery and water-tight basketry, in the making of which these Indians excel ; the crude plow, akin to that of ancient Egypt, and the still more primitive spade or digging stick ; games of divination and diversion ; musical instruments ; bows and arrows, which are still in limited use, with some of the stone implements used by ancestral tribes in the same region ; rope-making material and apparatus ; domestic utensils, costumes and the like. The collection is arranged in three wall cases, one of which is allotted to the peculiar articles made chiefly of the agave ; these include the mat used for bedding, basketry, the cradle, etc. In addition there is a large floor case showing life-size models of Papago women engaged in pottery making, with examples of the pottery made by the tribe ; and the peculiar carrying basket and costumes introduced were those found in actual use among the Indians last autumn. Many of the articles are accultural, since the Papago Indians have borrowed from the white men such arts as seemed good in their sight ; but a part (including the pottery and basketry) are primitive, and some represent perfectly the aboriginal condition of the tribe—among these being the family and other fetiches still in constant use among the Papago Indians. Two additional floor cases contain models of the Papago habitations, which are commonly built of a peculiar grass over a framework of mesquite poles, more rarely of adobe.

The Seri Indians occupy Tiburon Island, in the Gulf of California, and a considerable area of the adjacent mainland of Sonora, Mexico. They are probably the most primitive Indians remaining in North America ; they are without agriculture, and have no domestic animals except dogs. Their food is fish and water-fowl from the sea, and game from the land, commonly eaten raw, with the fruits of cacti, mesquite beans, berries, acorns, etc., in season. They have been at war with the neighboring tribes and with whites for three-and-a-half centuries, and lose no opportunity to rob by night or to murder by ambush or strategy. By reason of their war-like and treacherous character, the Seri Indians are little known to ethnologists. The

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articles and photographs exhibited are believed to be the first ever obtained among them. The collection comprises the bow and arrow (the latter, according to the testimony of Mexicans and Indians themselves, being poisoned), robes of pelican skin which take the place of blankets, face-painting material and utensils, basketry, and their peculiar pottery, as well as their exceedingly meager series of implements and utensils; the collection being complete except for the rude water-craft and fishing nets which it was found impracticable to obtain. The exhibit occupies two wall cases, with a number of articles arranged above them; it includes also a floor case containing a life-size model of a Seri hunter, armed with bow and quiver with arrows. The Seri Indians are notable for tall stature, robustness of chest, slenderness of arms and legs, and dark color of the skin. They are remarkably fleet of foot.

The Exhibit includes twelve transparencies (photographs on glass), six representing the Papago Indians with their houses, occupations, costumes, etc., while six represent the Seri Indians with the flimsy wickiups used on the mainland; their seaside houses, consisting of turtle-shells elevated on rocks or poles, have never been photographed.

DEPARTMENT OF ETHNOLOGY.

At the north end of the long aisle (Alcoves P and Q) and adjoining the eastern portal is the exhibit of the Department of Ethnology. This space is adjacent to the east entrance, and is actually one of the entrances to the Smithsonian space. On either side of the archway are shown groups of Indian figures, clothed in their native costumes, and engaged in their customary occupations. Especially conspicuous is the Sioux chieftain, in full war paint, mounted on his gaily housed pony, and with feather headdress sweeping to the ground; while facing him is a group of Kiowa Indians engaged in moving their habitation, some mounted upon a horse, and others carried behind it by means of primitive appliances known as the

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"travois." Beneath there is a group of Kiowa children, another of Navajo women weaving blankets, also a Crow warrior painting his blanket, and a Chippeway writing an inscription on a tablet of birch bark. Another very striking group of seven figures represents a religious ceremony practiced by the Indians of Prince Rupert's Sound. The principal figure is an Indian who is personating a cannibal, and who is about to leap into the house through a circular door. Two men are holding him back, while four musicians in front are playing upon their rude instruments. The remainder of this space is occupied by an exhibit prepared at the express desire of the ladies in charge of the Woman's Building, showing the arts which are practiced by women among primitive peoples, especially in North America. This collection includes implements for basket-making, pottery, weaving, bead-work, sewing, agricultural implements, and appliances for burden-bearing. These are all fully named and explained upon the labels. The theory which has guided Prof. O. T. Mason in the selection of this series is explained by him as follows:—

The object of this exhibit is to show the share that women have had in the industrial progress of the world.

In that continual struggle called Progress or Culture men have played the militant part, women the industrial part. A study of modern savagery is a guide to the activities of our own race in primitive times, and this teaches us that women were always the first house-builders and furnishers, and that they devised the utensils of the humble apartments. They were the first clothiers, whether in skins at the north or in vegetable fibre nearer the equator. It was the women who went first to the field with baskets that they themselves had fabricated; they gathered the seeds of plants, bore them home on their backs, ground them on rude mortars, and from the flour made their mush or dough. They invented all sorts of

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fireplaces and ovens, pottery, and cooking utensils, and the many things employed in the serving and consuming of food.

In early society women were literally the first beasts of burden, and it was they that devised all sorts of frames for the carrying of children, and bands, and baskets for carrying loads.

Both men and women in savagery are touched with the sense of beauty, the former in the adornment of the person, the weapon, and the canoe, the latter in the technique of basketry, weaving, embroidery and pottery.

In a small space it is designed to bring together a few examples of primitive woman's work in order to show the paths along which the sex has traveled in times past. The beadwork, and embroidery, the personal ornaments, the blankets, mats, belts, and looms, the utensils connected with food, the conveniences of housewifery, the bark-cloth, the delicate handwork in palm leaf, the pottery, the exquisite skin-dressing, and implements of Americans, Africans, and Polyne-sians are silent witnesses of the genius, patience, and skill of women in savagery.

Many visitors will approach the exhibits from the eastern portal, and must use this guide by taking up the Alcoves in reversed order from Q to A.

It is hoped that many thousands of those who, for the first time, view a portion of the collections of the National Museum at the Atlanta Exposition will hereafter have the opportunity of seeing the Museum in its entirety in Washington.

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